PA .NT COOPERATION TREAT

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 11 September 2000 (11.09.00)	
International application No. PCT/IB00/00070	**Applicant's or agent's file reference** GA 271 PCT
International filing date (day/month/year) 19 January 2000 (19.01.00)	**Priority date** (day/month/year) 29 January 1999 (29.01.99)
Applicant DANNENMAIER, Jürgen et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

07 August 2000 (07.08.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer Pascal Piriou
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

TENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION** see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
GA 271 PCT		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/IB 00/ 00070	19/01/2000	29/01/1999
Applicant		
GAMBRO DIALYSATOREN GMBH & CO. KG et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 2

   [X] as suggested by the applicant.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

   [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

Ir. ational Application No
PCT/IB 00/00070

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B01D63/02 B01D65/00 A61M1/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 341 005 A (OSCARSSON ROLF A) 27 July 1982 (1982-07-27) the whole document	1-4,6,9, 10,12
Y		7,8,11
A		5

X	US 4 343 668 A (FRANCISOUD JACQUES ET AL) 10 August 1982 (1982-08-10) the whole document in particular, column 4 lines 32-52	1-4,6,10

X	US 4 038 190 A (BAUDET JACQUES ET AL) 26 July 1977 (1977-07-26) abstract; figures 9,14-18,24 column 7, line 14 - line 28 column 8, line 52 -column 12, line 6 column 14, line 4 - line 58	1-4,6,10

	-/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 June 2000	26/06/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Hoornaert, P

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Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Int. ational Application No
PCT/IB 00/00070

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 200 158 A (AKZO GMBH) 5 November 1986 (1986-11-05) abstract; figures 1,14-17 page 16, line 1 -page 17, last line	12-15
Y	---	7,8,11
X	US 4 054 527 A (ESMOND WILLIAM G) 18 October 1977 (1977-10-18) the whole document	12
X	---	12
	WO 96 04068 A (FSM TECHNOLOGIES LTD ;HOOD ROBERT GORDON (GB)) 15 February 1996 (1996-02-15) the whole document	

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. ational Application No
PCT/IB 00/00070

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4341005 A	27-07-1982	AU 7900082 A	21-05-1982
		EP 0065540 A	01-12-1982
		WO 8201498 A	13-05-1982
US 4343668 A	10-08-1982	FR 2483901 A	11-12-1981
		DE 3162258 D	22-03-1984
		EP 0041467 A	09-12-1981
US 4038190 A	26-07-1977	FR 2231421 A	27-12-1974
		BE 815697 A	29-11-1974
		CH 603230 A	15-08-1978
		DE 2425945 A	19-12-1974
		GB 1470075 A	14-04-1977
		IT 1021026 B	30-01-1978
		JP 1085105 C	25-02-1982
		JP 50020989 A	05-03-1975
		JP 56028565 B	02-07-1981
		NL 7406929 A	03-12-1974
		SE 397638 B	14-11-1977
		SE 7407096 A	02-12-1974
EP 0200158 A	05-11-1986	DE 3611621 A	30-10-1986
		DE 3611623 A	30-10-1986
		DE 3685683 A	23-07-1992
		DE 8527694 U	19-02-1987
		EP 0203378 A	03-12-1986
		JP 61280396 A	10-12-1986
		JP 61293471 A	24-12-1986
		US 4724900 A	16-02-1988
US 4054527 A	18-10-1977	NONE	
WO 9604068 A	15-02-1996	AU 3183395 A	04-03-1996
		GB 2305619 A	16-04-1997

PATENT COOPERATION TREATY

ANKOM
2001 -04- 24

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

SPITMANN, Knut H.
GAMBRO LUNDIA AB
P.O. Box 10101
220 10 Lund
SUEDE

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing *(day/month/year)*	20.04.2001
Applicant's or agent's file reference GA 271 PCT	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IB00/00070	19/01/2000	29/01/1999

Applicant
GAMBRO DIALYSATOREN GMBH & CO. KG et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Bauer-Kober, S Tel.+49 89 2399-8014

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

ANKOM

2001 -04- 24

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
GA 271 PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/IB00/00070	19/01/2000	29/01/1999
International Patent Classification (IPC) or national classification and IPC B01D63/02		
Applicant GAMBRO DIALYSATOREN GMBH & CO. KG et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 9 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
07/08/2000	20.04.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Sembritzki, T Telephone No. +49 89 2399 8626

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB00/00070

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
Description, pages:

1,2,8-12	as originally filed			
3,3a,4-7	as received on	09/01/2001	with letter of	09/01/2001

Claims, No.:

1-12	as received on	09/01/2001	with letter of	09/01/2001

Drawings, sheets:

1/3-3/3	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-8, 10-12
	No:	Claims 9
Inventive step (IS)	Yes:	Claims 1-8
	No:	Claims 10-12
Industrial applicability (IA)	Yes:	Claims 1-12
	No:	Claims

2. Citations and explanations
   see separate sheet

Reference is made to the following document:

D1: US-A-4 341 005 (OSCARSSON ROLF A) 27 July 1982 (1982-07-27)
D5: WO 96 04068 A (FSM TECHNOLOGIES LTD ;HOOD ROBERT GORDON (GB)) 15 February 1996 (1996-02-15)

Point V:

1. Novelty and inventive step

1.1 Document D1, which is considered to represent the most relevant state of the art, discloses a method for producing filter with membranes of hollow fibres wherein a bundle of hollow fibres is placed into a first housing, a second housing portion is subsequently placed on the first housing portion and the ends of the fibres are potted into the housing from which the subject-matter of claim 1 differs in that both housing portions are adhered together by means of the potting compound when the hollow fibre ends are potted.
The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).

1.2 The problem to be solved by the present invention may be regarded as how to provide an inexpensive and easy manufacturing process for the abovementioned filters. The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:
By adhering together both housing portions by means of the potting compounds when the fibre ends are potted, the separate process step for securing together the two housing portions is eliminated. As a consequence, a separate device for connecting together the two housing portions in a sealed fashion is no longer necessary. Such a method is neither known from nor suggested by the available prior art.

1.3 Claims 2-8 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

1.4 A known product does not become novel only by the use of a new manufacturing process. Although document D5 discloses two separate process steps, the two half shells of the tubular filter housing which surround the bundle of parallel hollow fibres are adhered together by means of the potting compound (see D5, figure 1, abstract and page 4, lines 6-16). The subject-matter of independent claim 9 is therefore not novel

1.5 The subject-matter of the other dependent claims 10-12 contains only features which are either known from the prior art and which a skilled person could easily combine without any inventive skill, or which are the result of a normal design procedure followed by a skilled person (Article 33(3) PCT).

2. Industrial application

The industrial applicability is obvious.

This is true for the filters manufactured with this process as well as for other filters, for which a fibre bundle is fabricated in several processing steps and subsequently combined with other parts to form a filter. Examples for such filters are disclosed in DE-A-28 44 941, DE-A-28 45 002 and DE-A-28 45 003. The filters disclosed therein are each composed of several frames holding fibre bundles. The individual frames with finished fibre bundles are set on top of one another and clamped together by means of clamps, which form the housing. By adding end portions that include connections for inlet and outlet, the filter is finally completed.

Another known process consists of the feeding of hollow fibres to a winding wheel and winding these in sleeve lower parts arranged on the outer circumference thereof by turning the wheel. As soon as the desired fibre bundle thickness or fibre bundle size has been reached, the winding wheel is stopped and the sleeve upper parts are placed on the sleeve lower parts and fixed there. Subsequently, the hollow fibres are cut between the sleeves, the sleeves are removed from the winding wheel and transferred to an apparatus for taking the finished fibre bundles out of the sleeves and placing them into tubular filter casings.

This known process also has the disadvantage of numerous processing steps, so that in addition to the high constructional expense and the attendant cost there also exists a high danger of contamination of the finished fibre bundle, as has been described in detail above.

From US 4 341 005 a process is known where hollow fibers are fed to a winding wheel and are wound in first housing portions of a filter placed on the periphery of the winding wheel. If the first housing portions are full or slightly overfull, a second housing portion is placed over each fiber filled first housing portion. The two housing portions are secured together, and the hollow fibers between the housings are then cut. The housings are removed from the winding wheel, and the hollow fibers at the ends of the housings are thereafter potted by centrifugal castings which also permits the potting compound to join

with or to adhere to the housing walls as well as to the hollow fibers. Following this potting the ends of the hollow fibers are again cut in the area of the potting compound to reexpose the hollow corse and end caps are sealed onto the housings to complete the filter.

Even if with this known process the risk for contamination of the finished fiber bundle is reduced, this known process still has the disadvantage of numerous processing steps.

From US 4 343 668 a more complex process is known, where a potting compound is applied at spaced intervalls on the hollow fibers during rotation of the winding wheel. This requires a complex and complicated device leading to high constructional expenses and attendant costs.

From US 4 038 190 a process is known where hollow fibers are wound on a core, whereafter the core is placed in a housing.

This known process also has the disadvantage of numerous processing steps, so that in addition to the high constructional expenses and the attendant costs there is also a high risk for contamination of the finished fiber bundle as has been described in detail above.

DESCRIPTION OF THE INVENTION

In view of this background it is thus the object of the present invention to provide a method for producing filters with membranes of hollow fibres, for example for dialysis, whereby filters of any desired size can inexpensively and easily be reliably manufactured without excessive outlay, and with which the danger of contamination of the fibre bundle during fabrication of the filter is reduced.

A further object of the present invention is to provide a filter with membranes of hollow fibres, in which the hollow fibres are arranged essentially parallel to one another as a bundle in a tubular filter housing and that can be easily, inexpensively and reliably fabricated without excessive outlay.

These objects are achieved by way of a method wherein hollow fibres are laid one after the other in a first housing portion to form a bundle, subsequently a second housing portion is placed on the first housing portion to form a filter housing, the housing portions are joined in a sealed fashion, the hollow fibres are joined in a sealed fashion both to each other and to the filter housing at least at one end by means of a potting compound, and the potted fibre ends are cut so that the hollow fibres terminate with open ends, whereby the first housing portion and the second housing portion are adhered together by means of the potting compound when the hollow fibre ends are potted.

This obviates an additional processing step for providing a sealed joint between both housing portions, so that the method as a whole becomes simple and less expensive. Polyurethane can be used as a potting compound, for example. This is particularly favourable when polycarbonate or ABS (Acrylnitril-Butadiene-Styrol copolymer) is used as the material for the housing portions.

The advantageous method for adhering the two housing portions by means of the potting compound can also be reliably employed when the hollow fibres are to be connected in a sealed fashion to one another and to the housing portions or the filter housing only at one end. In this case, for example, the potting compound can be fed in a suitable manner to the contact surfaces of the housing portions and to the ends of the hollow fibres that are to be potted.

According to a preferred further embodiment, the hollow fibre bundle ends are each covered with a terminating part that is connected to the filter housing in a sealed fashion.

With this method it is possible to manufacture filters of any desired size simply and reliably, while at the same time, the danger of contamination is significantly reduced according to the preferred embodiment. The hollow fibres are laid one after the other in the filter housing to form a bundle, and the filter housing is closed directly after completing the fibre bundle. The fibre bundle is thus exposed to the surrounding atmosphere for only a short time, so that the risk of contamination of the fibre bundle is reduced. Also the risk of contamination of individual hollow fibres during the formation of the fibre bundle is reduced, as they are laid directly in the filter housing, and is not required to pass through several processing stages before arriving in the filter housing.

Laying the hollow fibres one after another in the filter housing has the further advantage that filters of any desired size can be produced easily and without replacing tools. Depending on the filter size, and thus the required size of the fibre bundle, only the required number of hollow fibres need be placed in the corresponding filter housing and the latter subsequently closed. In this way, filters of any desired size, i.e. with any desired membrane surface, can be fabricated easily and with little outlay. In particular, it is no longer necessary to provide different tools for each of the different fibre bundle sizes.

The method according to the invention is further simplified when, in accordance with a particularly preferred embodiment, the hollow fibres are fed continuously to a rotary winding wheel, on the outer circumference of which first housing portions are arranged. The housing portions are arranged such that the hollow fibres can be laid in these first housing portions as the wheel rotates, while after placing the second housing portions on the first housing portions the hollow fibres are severed between the filter housings.

In this way, the said filters can be produced in a particularly simple fashion. The hollow fibres are continually wound into the housing portions arranged on the outer circumference of the winding wheel until the desired fibre bundle thickness, and therefore the desired membrane surface is

obtained. It is advantageous that several filters or fibre bundles can be made simultaneously in one process step, namely the winding of the hollow fibres on the winding wheel. The number of generated filters or fibre bundles depends inter alia on the diameter of the winding wheel. A winding wheel with a large diameter has a larger outer circumference on which more housing portions can be arranged one behind the other. Likewise, the width of the winding wheel determines the number of filters of fibre bundles that can be made in one processing stage. If the winding wheel is wide enough, two or more housing portions can be laid side by side, so that two or more rows of housing portions arranged one after another into which the hollow fibres can be wound are provided on the outer circumference. This all contributes to providing a simple and inexpensive method.

It is furthermore advantageous when, in accordance with another embodiment, the second housing portion is flexibly joined to the first housing portion so that it need only be swung onto the first housing portion. For example, the first and second housing portions could be flexibly joined by means of a film hinge. This simplifies and facilitates the manufacture of the filter housing itself, since the first and second housing portions can be formed together as one part.

A further improvement of the method is obtained when both housing portions are formed half-shell-shaped, and the second half-shell-shaped housing portion is placed on the first half-shell-shaped housing portion to form a tubular filter housing, in accordance with a further preferred embodiment. This facilitates on the one hand the winding of the hollow fibres in the first housing portion, as the half-shell shape of the first housing portion causes the hollow fibres to be centred as they are wound. On the other hand, the fibre bundle with the hollow fibres arranged essentially in parallel is surrounded in a manner adapted to its contours by the finished tubular filter housing. Thus no superfluous space is present around the fibre bundle that could accommodate unnecessarily large amounts of dialysis fluid, for example. Furthermore, the

fibre bundle is supported from the outside so that the individual hollow fibres are securely held in the bundle. Mechanical damage to the hollow fibres is consequently avoided.

The terminating parts covering the hollow fibre ends can be connected to the filter housing in any desired manner, provided that a sealed and reliable joint is obtained. However, it is advantageous when the terminating parts are glued or welded or are screwed on to the filter housing. In this way, a simple, secure and reliable connection between terminating parts and filter housing is obtained.

The object is achieved by way of an apparatus, wherein the tubular filter housing is composed of two half-shells, and wherein the two half-shells are adhered together by means of the potting compound.

In this way the filters can be made simply and inexpensively without excessive outlay, as the hollow fibres can be laid one after the other in a first half-shell. Depending on the desired filter size or fibre bundle size that determines the membrane surface, the required number of hollow fibres can be laid in the filter housing. The thus formed fibre bundle can then be covered directly by the second half-shell, that is placed on the first half-shell, so that, on the one hand, damage to the hollow fibres, or the fibre bundle, by external forces is avoided, and on the other hand, the risk of contamination is reduced.

In accordance with a preferred embodiment, it is advantageously provided that the tubular filter housing is composed of two flexibly connected

CLAIMS

1. Method for producing filters with membranes of hollow fibres, for example for dialysis, wherein

hollow fibres (1) are laid one after the other in a first housing portion (21) to form a bundle,

subsequently, a second housing portion (23) is placed on the first housing portion (21) to form a filter housing (13),

the two housing portions (21, 23) are connected together in a sealed fashion,

at least at one end, the hollow fibres (1) are connected together and with the filter housing (13) in a sealed fashion by means of a potting compound,

and the potted hollow fibre ends are cut so that the hollow fibres (1) terminate with open ends,

characterised in that the first housing portion (21) and the second housing portion (23) are adhered together by means of the potting compound when the hollow fibre ends are potted.

2. Method according to claim 1, **characterised in** that the hollow fibre bundle ends are each covered with a terminating part (47), which is connected to the filter housing (13) in a sealed fashion.

3. Method according to claim 1 or 2, **characterised in** that hollow fibres (1) are continuously fed to a rotary winding wheel (9), on the outer circumference of which first housing portions (21) are arranged in such a manner that the hollow fibres (1) are laid one after the other in the first housing portions (21) as the winding wheel (9) is rotated,

and that after placing the second housing portion (23) on the first housing portion (21), the hollow fibres (1) are severed between the filter housings (13).

4. Method according to one of the previous claims, **characterised in** that the second housing portion (23) is flexibly connected to the first housing portion (21) and is swung over onto the first housing portion (21).

5. Method according to claim 4, **characterised in** that the second housing portion (23) is flexibly connected to the first housing portion (21) by means of a film hinge (27), and is swung over onto the first housing portion (21).

6. Method according to one of the previous claims, **characterised in** that the second housing portion (23) is half-shell-shaped and is placed on the first housing portion (21) which is also half-shell-shaped to form a tubular filter housing (13).

7. Method according to one of the previous claims, **characterised in** that the terminating parts (47) are glued or welded to the filter housing (13) or are screwed onto the filter housing (13).

8. Method according to one of the previous claims, **characterised in** that the first and second housing portions (21, 23) are fastened together by means of clamping means (43, 45; 59, 61) arranged thereon before they are joined in a sealed fashion.

9. Filter with membranes of hollow fibres, for example for dialysis, wherein the hollow fibres are arranged as a bundle essentially parallel to one another in a tubular filter housing, and, at least at one end, are connected together and with the tubular filter housing in a sealed fashion by means of a potting compound, **characterised in** that the tubular filter housing (13) is composed of two half shells (21, 23), and in that the two half shells (21, 23) are adhered together by means of the potting compound.

10. Filter according to claim 9, **characterised in** that the tubular filter housing (13) is composed of two flexibly connected half shells (21, 23).

11. Filter according to claim 10, **characterised in** that the tubular filter housing (13) is composed of two half shells (21, 23) that are flexibly connected by means of a film hinge (27).

12. Filter according to one of claims 9 to 11, **characterised in** that the half shells (21, 23) comprise clamping means (43, 45; 59, 61), whereby the half shells (21, 23) are connectable to one another.